

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
BORDEN LADNER GERVAIS LLP  
World Exchange Plaza  
1100 - 100 Queen Street  
OTTAWA, Ontario  
Canada, K1P 1J9

## PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing 4 April 2005 (04-04-2005)  
(day/month/year)

Applicant's or agent's file reference  
PAT 989W-90

**FOR FURTHER ACTION** See paragraphs 1 and 4 below

International application No.  
PCT/CA2004/002021

International filing date 24 November 2004 (24-11-2004)  
(day/month/year)

Applicant  
NATIONAL RESEARCH COUNCIL OF CANADA ET AL

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19 :**

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46) :

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

**For more detailed instructions**, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that :  
☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for the international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, within **20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage I, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9  
Facsimile No.: 001(819)953-2476

Authorized officer  
Jean-Luc Robert (819) 953-0756

## NOTES TO FROM PCT/ISA/220

These Notes are intended to give instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

**When?** Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

**How?** Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

**The amendments must be made in the language in which the international application is to be published.**

#### What documents must/may accompany the amendments?

**Letter (Section 205(b)) :**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

**The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.**

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

**The following examples illustrate the manner in which amendments must be explained in the accompanying letter :**

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

**It must be in the language in which the international application is to be published.**

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### **Consequence if a demand for international preliminary examination has already been filed**

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/PEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1bis(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43bis.1(c)).

### **Consequence with regard to translation of the international application for entry into the national phase**

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PAT 989W-90	<b>FOR FURTHER ACTION</b> <div style="display: flex; justify-content: space-between; font-size: small;"> <span></span> <span>see Form PCT/ISA/220 as well as, where applicable, item 5 below.</span> </div>	
International application No. PCT/CA2004/002021	International filing date (day/month/year) 24 November 2004 (24-11-2004)	(Earliest) Priority date (day/month/year) 25 November 2003 (25-11-2003)
Applicant NATIONAL RESEARCH COUNCIL OF CANADA ET AL		
<p>This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.</p> <p>This international search report consists of a total of <u>6</u> sheets.</p> <p><input checked="" type="checkbox"/> It is also accompanied by a copy of each prior art document cited in this report.</p> <p><b>1. Basis of the report</b></p> <p>a. With regard to the <b>language</b>, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p style="margin-left: 40px;"><input type="checkbox"/> The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).</p> <p>b. <input checked="" type="checkbox"/> With regard to any <b>nucleotide and/or amino acid sequence</b> disclosed in the international application, see Box No. I.</p> <p>2. <input type="checkbox"/> <b>Certain claims were found unsearchable</b> (see Box No. II).</p> <p>3. <input type="checkbox"/> <b>Unity of invention is lacking</b> (see Box No. III).</p> <p>4. With regard to the <b>title</b>,</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> the text is approved as submitted by the applicant.</p> <p style="margin-left: 40px;"><input type="checkbox"/> the text has been established by this Authority to read as follows :</p> <p>5. With regard to the <b>abstract</b>,</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> the text is approved as submitted by the applicant.</p> <p style="margin-left: 40px;"><input type="checkbox"/> the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.</p> <p>6. With regard to the <b>drawings</b>,</p> <p style="margin-left: 40px;">a. the figure of the <b>drawings</b> to be published with the abstract is Figure No. <u>  </u></p> <p style="margin-left: 80px;"><input type="checkbox"/> as suggested by the applicant.</p> <p style="margin-left: 80px;"><input type="checkbox"/> as selected by this authority, because the applicant failed to suggest a figure.</p> <p style="margin-left: 80px;"><input type="checkbox"/> as selected by this Authority, because this figure better characterizes the invention.</p> <p style="margin-left: 40px;">b. <input checked="" type="checkbox"/> none of the figures is to be published with the abstract.</p>		

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/002021

**Box No. I**      **Nucleotide and/or amino acid sequence(s) (Continuation of Item 1.b of the first sheet)**

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
  - a. type of material:
    - ☒ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☒ in written format
    - ☒ in computer readable form
  - c. time of filing/furnishing:
    - ☒ contained in the international application as filed
    - ☒ filed together with the international application in computer readable form
    - ☐ furnished subsequently to this Authority for the purposes of search
2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statement that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/002021

## A. CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: C12N-15/54, C12N-15/29, C12N-15/82, C12N-5/10, A01H-5/00, A01H-5/10, C12P-7/64

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC<sup>7</sup>: C12N, A01H, C12P, C07, A61

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Canadian Patent Database, DELPHION, USPTO, ESPACENET, PUBMED, GENBANK, GENESEQ  
fatty acid, elongase,  $\beta$ -(or 3-) ketoacyl-CoA synthase, FAE1, KCS, erucic acid, *Nasturtium*, *Crumbe*, *Linimathaceae*, *Tropaeolaceae*, *Simmondsia* (jojoba), *Linum* (flax), transgene, transgenic plant, SEQ ID NOs 22-27.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	KATAVIC, V. et al. Utility of the <i>Arabidopsis FAE1</i> and yeast <i>SLC1-1</i> gene for improvements in erucic acid and oil content in rapeseed. Biochemical Society Transactions. December 2000, Vol.28, No.6, Pages 935-937. Abstract; page 936, l.c, lines 2-8; figure 1; table 2; and page 937, r.c, lines 14-20.	1, 4-17 and 20-23
Y		3
X	KATAVIC, V. et al. Improving erucic acid content in rapeseed through biotechnology: What can the <i>Arabidopsis FAE1</i> and the yeast <i>SLC1-1</i> gene contribute? Crop Science. May-June 2001, Vol.41, No.3, Pages 739-747. Abstract; figure 1; page 745, r.c. lines 14-18; page 746, l.c. last paragraph to r.c. last paragraph	1, 4-17 and 20-23
Y		3

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

\* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  
15 February 2005 (15-02-2005)Date of mailing of the international search report  
4 April 2005 (04-04-2005)Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage I, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9Authorized officer  
Qianfa Chen (819) 994-1374

Facsimile No. 001(819)953-2476

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/002021

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	CA 2,203,754 A1 (JAMES, A. et al.) 09 May 1996 (09-05-1996) Abstract; page 1, line 31 to page 2, line 2; page 3, line 27 to page 4, line 20; page 8, line 5 to page 9, line 20; and page 10, lines 26-28.	1, 4-9 and 12-23
Y		3
X	CA 2,463,166 A3 (WILMER, J. et al.) 24 April 2003 (24-04-2003) Abstract; page 3, lines 27-30; page 4, lines 24-27; page 5, lines 14-26; page 10, lines 16-21; and page 13, lines 22-27.	1, 2, 4, 5, 8-17 and 20-23
Y		3
X	CA 2,337,980 (WIENAND, U. et al.) 17 February 2000 (17-02-2000) Example 4	5-7
X	CA 2,292,770 (JAWORSKI, J. G. et al.) 10 December 1998 (10-12-1998) Examples 1 and 2	5-7
X,P	MIETKIEWSKA, E. et al. Seed-specific heterologous expression of a <i>Nasturtium FAE</i> Gene in <i>Arabidopsis</i> results in a dramatic increase in the proportion of erucic acid. Plant Physiology. September 2004, Vol.136, Pages 2665-2675.	1, 2, 4-9, 12-17 and 20-23
A	CA 2,177,598 (METZ, J. G. et al.) 08 June 1995 (08-06-1995)	1-23
A	CA 2,411,247 (JAWORSKI, J. G. et al.) 13 December 2001 (13-12-2001)	1-23
A	CA 2,372,632 (SHORROSH, B. S.) 09 November 2000 (09-11-2000)	1-23
A	CA 2,285,970 (KUNST, L. et al.) 22 October 1998 (22-10-1998)	1-23

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/CA2004/002021

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
CA2203754 A1	09-05-1996	AT276368T T AU703957 B2 AU3969995 A DE69533516D D1 EP0788542 A1 US6124524 A US6184355 B1 WO9613582 A1	15-10-2004 01-04-1999 23-05-1996 21-10-2004 13-08-1997 26-09-2000 06-02-2001 09-05-1996
CA2463166 A1	24-04-2003	EP1440154 A2 GB0124574D D0 HU0401838 A2 WO03033713 A2	28-07-2004 05-12-2001 29-11-2004 24-04-2003
CA2337980 A1	17-02-2000	AU748943 B2 AU5417299 A EP1100930 A1 WO0008172 A1	13-06-2002 28-02-2000 23-05-2001 17-02-2000
CA2292770 A1	10-12-1998	AU749114 B2 AU7721098 A EP0986296 A1 JP2002503961T T US6307128 B1 US2002066123 A1 WO9854954 A1	20-06-2002 21-12-1998 22-03-2000 05-02-2002 23-10-2001 30-05-2002 10-12-1998
CA2177598 A1	08-06-1995	CA2079113 A1 CA2123893 A1 CA2168042 A1 CA2292768 A1 CA2352473 A1 CN1053218C C CN1062902C C CN1129014 A CN1301304T T EP0529648 A1 EP0572803 A1 EP0711351 A1 EP0731840 A1 EP0986647 A1 EP1135474 A2 JP5506367T T JP7501221T T JP9501325T T JP9505739T T JP2002513293T T JP2002532089T T KR236483 B1 KR268752 B1 US5370996 A US5403918 A US5411879 A US5445947 A US5679881 A US5723747 A US6492509 B1 US6596538 B1 US6828475 B1 US2003228668 A1 WO0036095 A2 WO9214816 A1 WO9310241 A1 WO9515387 A2 WO9533055 A2 WO9855632 A1	23-08-1992 27-05-1993 07-12-1995 10-12-1998 22-06-2000 07-06-2000 07-03-2001 14-08-1996 27-06-2001 03-03-1993 08-12-1993 15-05-1996 18-09-1996 22-03-2000 26-09-2001 22-09-1993 09-02-1995 10-02-1997 10-06-1997 08-05-2002 02-10-2002 15-01-2000 01-11-2000 06-12-1994 04-04-1995 02-05-1995 29-08-1995 21-10-1997 03-03-1998 10-12-2002 22-07-2003 07-12-2004 11-12-2003 22-06-2000 03-09-1992 27-05-1993 08-06-1995 07-12-1995 10-12-1998



## INTERNATIONAL SEARCH REPORT

International application No. PCT/CA2004/002021
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CA2411247 A1	13-12-2001	AU6829601 A EP1294898 A2 US6713664 B2 US2004139498 A1 WO0194565 A2	17-12-2001 26-03-2003 30-03-2004 15-07-2004 13-12-2001
CA2372632 A1	09-11-2000	AU4703400 A EP1173583 A1 WO0066749 A1	17-11-2000 23-01-2002 09-11-2000
CA2285970 A1	22-10-1998	AU750707 B2 AU7019198 A EP0975767 A1 US6274790 B1 US2002116735 A1 WO9846766 A1	25-07-2002 11-11-1998 02-02-2000 14-08-2001 22-08-2002 22-10-1998

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
BORDEN LADNER GERVAIS LLP  
World Exchange Plaza  
1100 - 100 Queen Street  
OTTAWA, Ontario  
Canada, K1P 1J9

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing 4 April 2005 (04-04-2005)  
(day/month/year)

Applicant's or agent's file reference  
PAT 989W-90

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
**PCT/CA2004/002021**

International filing date (day/month/year)  
24 November 2004 (24-11-2004)

Priority date (day/month/year)  
25 November 2003 (25-11-2003)

International Patent Classification (IPC) or both national classification and IPC  
IPC: C12N-15/54, C12N-15/29, C12N-15/82, C12N-5/10, A01H5/00, A01H-5/10, C12P-7/64

Applicant  
**NATIONAL RESEARCH COUNCIL OF CANADA ET AL**

1. This opinion contains indications relating to the following items :

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Box No. I    | Basis of the opinion  |
| <input checked="" type="checkbox"/> Box No. II   | Priority  |
| <input type="checkbox"/> Box No. III             | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input checked="" type="checkbox"/> Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V    | Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement. |
| <input type="checkbox"/> Box No. VI              | Certain documents cited   |
| <input type="checkbox"/> Box No. VII             | Certain defects in the international application  |
| <input checked="" type="checkbox"/> Box No. VIII | Certain observations on the international application   |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage 1, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9

Authorized officer

Qianfa Chen (819) 994-1374

Facsimile No: 001(819)953-2476

**Box No. I**      **Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language which it was filed, unless otherwise indicated under this item.  
  
[ ] This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search  
(under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of :
  - a. type of material  
[ X ] a sequence listing  
[ ] table(s) related to the sequence listing
  - b. format of material  
[ X ] in written format  
[ X ] in computer readable form
  - c. time of filing/furnishing  
[ X ] contained in the international application as filed.  
[ X ] filed together with the international application in computer readable form.  
[ ] furnished subsequently to this Authority for the purposes of search.
3. [ ] In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statement that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments :

Page 3 of 7

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

☐ paid additional fees under protest☐ not paid additional fees

2. [ ] This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

[X] complied with

[ ] not complied with for the following reasons :

4. Consequently, this opinion has been established in respect of the following parts of the international application :

[X] all parts

[ ] the parts relating to claim Nos. \_\_\_\_\_

**Box No. V Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	3	YES
	Claims	1, 2 and 4-23	NO
Inventive step (IS)	Claims		YES
	Claims	1-23	NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims		NO

**2. Citations and explanations :**

D1: Biochemical Society Transactions, December 2000, Vol.28, No.6, Pages 935-937

D2: Crop Science, May 2001, Vol.41, No.3, Pages 739-747

D3: CA 2,203,754 (JAMES, A. et al.) 09 May 1996 (09-05-1996)

D4: CA 2,463,166 A3 (WILMER, J. et al.) 24 April 2003 (24-04-2003)

D5: CA 2,337, 980 (WIENAND, U. et al.) 17 February 2000 (17-02-2000)

D6: CA 2,292,770 (JAWORSKI, J. G. et al.) 10 December 1998 (10-12-1998)

D7: Plant Physiology, September 2004, Vol.136, Pages 2665-2675

**A. Novelty**

Claims 1, 4-17 and 20-23 lack novelty and do not comply with Article 33(2) of the Patent Cooperation Treaty (PCT), as being anticipated by documents D1 or D2. Both D1 and D2 separately describe the utility of the arabidopsis FAE1 and yeast SLC1-1 genes for altering erucic acid (very long chain monounsaturated fatty acid) and oil content in rapeseed using a transgenic approach. The heterologous Arabidopsis FAE1 or yeast SLC1-1 gene, under the control of the seed-specific napin promoter, is expressed in B. napus. Both FAE1 B. napus Hero and SLC1-1 B. napus Hero transgenic progenies are disclosed. Also contemplated is the combination of the two genes into B. napus by crosses between the best FAE1 B. napus Hero and SLC1-1 B. napus Hero transgenic lines. D2 also describes the expression of Aarabidopsis FAE1 gene in yeast cells (p745, left column, lines 14 and 15). Therefore, claims 1, 4-17 and 20-23 are not novel in view of D1 or D2.

Claims 1, 4-9 and 12-23 lack novelty and do not comply with Article 33(2) of the Patent Cooperation Treaty (PCT), as being anticipated by document D3. D3 describes polynucleotide sequences from both the Arabidopsis FAE1 gene and the B. napus FAE1 gene. DNA constructs comprising the polynucleotide sequences are used to modify FAE1 gene expression and thereby modulate fatty acid content in plant organs or parts, particularly seeds. Transgenic plants (e.g., Brassica plants) comprising a recombinant expression cassette which includes a plant promoter operably linked to the polynucleotide

(Continuation on Supplemental Box)

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made :

**D. Claim Defects**

Claims 1-5, 10, 12, 22 and 23 are broader in scope than the teaching of the description and do not comply with Article 6 of the Patent Cooperation Treaty (PCT). These claims, as defined, encompass fatty acid elongase genes that were not contemplated by the applicant. Applicant has only described an elongase gene from *Tropaeolum majus* as depicted in SEQ ID NO 23 and an elongase gene from *Crambe abyssinica* as depicted in SEQ ID NO 25. Therefore, applicant should define the elongase genes accordingly.

Claims 5 and 10 do not comply with Article 6 of the Patent Cooperation Treaty (PCT). The expression "allelic variant thereof" does not define a plant fatty elongase (claims 5 and 10) or a plant desaturase (claim 10) in a complete and explicit manner.

Claim 10 is broader in scope than the teaching of the description and does not comply with Article 6 of the Patent Cooperation Treaty (PCT). This claim, as defined, encompasses desaturase genes that were not contemplated by the applicant. Applicant has only described the *Limnanthes Des 5 desaturase* gene (GenBank accession NO AF247133) co-expressed with napin:NastFAE. Therefore, applicant should define the desaturase gene accordingly.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of Box V

sequence are disclosed. The use of the DNA construct in modulating fatty acid content in a broad range of types of plants is contemplated, these plants includes Linum, Simmondsia, and Limnathes. (page 8, line 21 to page 9, line 3). Further, the FAE1 polypeptide may also be expressed in a microorganism host, such as bacteria or yeast. (page 10, lines 26 and 27). Therefore, claims 1, 4-9 and 12-23 are not novel in view of D3.

Claims 1, 2, 4, 5, 8-17 and 20-23 lack novelty and do not comply with Article 33(2) of the Patent Cooperation Treaty (PCT), as being anticipated by document D4. D4 describes a method for producing, in a plant, an oil having an erucic acid content above 66%, by expressing an heterologous nucleic acid encoding an elongase and a nucleic acid encoding an acyltransferase enzyme. Brassica napus FAE1-1 and FAE1-2, or similar enzymes from Arabidopsis and Nasturtium are preferred examples of the fatty acid elongases disclosed (page 5, lines 14-26). Therefore, claims 1, 2, 4, 5, 8-17 and 20-23 are not novel in view of D4.

Claims 5-7 lack novelty and do not comply with Article 33(2) of the Patent Cooperation Treaty (PCT), as being anticipated by document D5 or D6. D5 (see Example 4) and D6 (see Examples 1 and 2) describe a yeast cell comprising an heterologous gene coding for an heterologous plant fatty acid elongase. Therefore, D5 or D6 are novelty destroying for the subject matter of claims 5-7.

D7 describes that the seed specific heterologous expression of a Nasturtium FAE gene in Arabidopsis results in a dramatic increase in the proportion of erucic acid. Therefore, D7 would become relevant and would be novelty destroying, under Article 33(2) of the Patent Cooperation Treaty (PCT), to claims 1, 2, 4-9, 12-17 and 20-23 if the priority claim is found to be invalid.

Claim 3 meets the criteria set out in Article 33(2) of the Patent Cooperation Treaty (PCT), because none of the prior art describes the use of the Crabe fatty acid elongase gene for altering erucic acid (very long chain monounsaturated fatty acid) and oil content in plant.

B. Inventive Step

Claim 3 lacks an inventive step and does not comply with Article 33(3) of the Patent Cooperation Treaty (PCT). As high erucic acid rapeseeds are regaining interest for industrial purpose, the research in the field has been focussing on genetic engineering technique to increase the erucic acid content of rapeseed. One of the main approaches that is used in the prior art to alter the erucic acid content in plants is by expressing heterologous elongase (FAE1) genes (D1-D5). The use of elongase enzymes from Brassica napus, other Brassica species, Arabidopsis, Joboba, and Nasturtium, and the use of enzymes which are substantially identical in sequence to elongase and which share the same enzymatic activity as elongase for increasing the erucic acid content in plants have been disclosed (D4, page 5, lines 14-26). Therefore, a skilled person would regard it normal design procedure to use any fatty acid elongase gene regardless of its source for increasing the erucic acid content in plants. Absent from defining the Crabe elongase gene in a complete and explicit manner (e.g., by a nucleotide sequence as depicted in SEQ ID NO 25), claim 3 is indistinguishable from the prior art. Therefore, the subject matter of claim 3 does not involve an inventive step and does not satisfy the criteria set forth in Article 33(3) PCT.

C. Industrial Applicability

Claims 1-23 have industrial applicability and meet the requirements of Article 33(4) of the Patent Cooperation Treaty (PCT).